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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/827,422

04/20/2004

Tae-kyoung Lee

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EXAMINER

WRIGHT, KAINOA

ART UNIT

PAPER NUMBER

2861

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/827,422	Applicant(s) LEE, TAE-KYOUNG	
	Examiner Kainoa BK Wright	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 04/20/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>04/20/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 16 is objected to because of the following informalities: There is a lack of antecedent basis for the term "alignment jig" within the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Appropriate correction is required.

Lines 3, 4 and 6 of Claim 15 claim a "sub-assembly line" and a "main assembly line". It is unclear whether applicant is claiming the assembly lines as physical objects (such as the assembly lines within a factory) or as construction processes. If the later, the claim should read, "sub-assembly" or "sub-assembly process", or something similar that does not infer physicality to the assembling process. Examiner will examine the claim as if the word "line" is absent. Similarly for the "main assembly line", examiner will examine the claim as if the word "line" is absent.

Claims 16 and 17 incorporate by reference the content of Claim 15 and therefore are rejected on the same grounds as Claim 15.

Lines 3 and 4 of Claim 17 claim an alignment jig having a "fixing section for fixing the fixing member of the multibeam light source unit." It is unclear what this fixing section is because it is not disclosed anywhere else in the specification, nor is it pointed out in the drawings. It is further unclear whether the function of the fixing section is to repair the fixing member or to attach the fixing member to the rotary gear. For the purposes of examination, the fixing section will be omitted, and the claim will be examined on its other merits.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6, 7 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Makino (US 6,320,647).

Regarding Claim 1: Makino discloses a multibeam light source comprising a laser diode 30; a rotating member, as the combination of a rotating base 3 and a support body 2; and a fixing member, as the combination of a base 10 and an optical housing 12 (Figure 2). The rotating member is rotatable at an angle to align a plurality of beams emitted from the laser diode, and is also fixable to the fixing member. The order in which the parts of the apparatus are constructed is irrelevant in light of the fact that Claim 1 is claiming an apparatus not a method of construction. The order in which the

parts of the apparatus are constructed is further irrelevant in light of the fact that the assembly order has no impact on the final structure of the apparatus.

Regarding Claim 2: Makino discloses a press fit hole (see center hole of support body 2 in Figure 2) into which the laser diode is fitted; and a rotating boss, as a sleeve shaft 3e. Makino further discloses the fixing member comprising a first member, as the base 10; and a second member, as the optical housing 12, extending vertically from the first member (see Figure 2).

Regarding Claim 3: Makino discloses a pair of screws 11 provided to fix the rotating member to the first member of the fixing member (Figure 2); and a pair of circular arc-shaped long holes (see arced holes of rotating base 3 in Figure 2) into which the screws are engaged.

Regarding Claim 6: Makino discloses a driving circuit board being connected to the rotating member, as a substrate 7 including a driving circuit for the semiconductor laser (Figure 2 and column 5, lines 9-15).

Regarding Claim 7: Makino discloses a collimating lens 35 (Figure 3) located within a lens holder, disclosed by Makino as a mirror pipe 6 (Figure 2), the lens holder being placed within the second member of the fixing member (Figure 2).

Regarding Claim 15: Makino teaches the fabrication of a multibeam light source unit in the exploded view of Figure 2. This multibeam light source is complete in itself and is transferable to any type of image forming apparatus that uses a multibeam scanner (column 6, lines 40-46). Examiner interprets this as being a sub-assembly of a multibeam light source unit. Makino further teaches the alignment of emitted beams by

a rotation of the laser diode through a rotating base 3 (column 5, lines 45-50) and the mounting of the light source into a frame 12 (Figure 2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-5 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makino (US 6,320,647) in view of Komatsu (US 5,774,248).

Regarding Claim 4: Makino teaches a multibeam light source comprising a rotating member.

Makino does not teach the rotating member comprising a gear section engaged with a rotary gear for turning the rotating member.

Komatsu teaches a gear section 23 of a rotating member of a multibeam light source engaged with a rotary gear capable of turning the rotating member.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Makino to include the gear construction of Komatsu in order to provide for incremental adjustments, controlled by the rotation of the gear, in the beam alignment, as taught by Komatsu.

Regarding Claim 5: Official notice is taken that it is old and well known to use a plurality of rotary gears in mechanical drive systems in order to provide better control of

a rotating member. For example: a plural gear setup limits the amount of play between the teeth of the gears and consequentially provides more control. This is a mechanical phenomenon that is well known in the basic levels of mechanical knowledge and is well used in all types of mechanical drive systems.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Makino in view of Komatsu to include a secondary gear setup in order to provide further control of the drive system in light of what is old and well known in mechanical drive systems.

Regarding Claim 16 and 17: Makino teaches the light source comprising a rotating member 3 supporting the laser diode 30; and a fixing member 10 supporting the rotating member 3 (Figure 2). Makino further teaches the rotating member rotatable by an angle to align the position of the laser diode (column 5, lines 45-50).

Komatsu teaches an alignment jig, as the combination of the gear 26 and motor 24 (Figure 3), fixed to a fixing member, as a base 12 (Figure 4), via a rotating member 11.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Makino to include the alignment jig of Komatsu in order to provide for adjustments in the beam alignment controlled by machine process as opposed to manual turning, as taught by Komatsu.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Makino (US 6,320,647) in view of Makino (US 6,941,077) and in further view of Watanabe (US 6,549,228).

Makino (US 6,320,647) teaches a multibeam light source comprising a lens holder placed within a second member of a fixing member.

Makino (US 6,320,647) does not teach a semicircular groove for receiving the lens holder. Makino further does not teach a plurality of holes within the fixing member operable with fastening means to fasten the fixing member to an object.

Makino (US 6,941,077) teaches a plurality of holes (see the holes on bracket 49 of Figure 8A) within the fixing member operable with fastening means to fasten the fixing member to an object.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the bracket 49 and fastening holes of Makino (US 6,941,077) as the optical housing 12 of Makino (US 6,320,647) in order to fasten the optical housing to a printer casing or any other object where the multibeam light source might be used.

Watanabe teaches a U-shaped fixed supporting frame 27 firmly supporting a cylindrical member 26, the cylindrical member holding a collimating lens 3 (Figure 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Makino (US 6,320,647) in view of Makino (US 6,941,077) to include the U-shaped, semicircular construction of the fixing member of Watanabe in order to provide an alternate support structure for emitting laser beams in a predetermined direction as disclosed by Watanabe (column 6, lines 60-67).

6. Claims 9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogi et al. (US 6,992,690) in view of Makino (US 6,320,647).

Mogi et al. teaches a laser scanning apparatus comprising a multibeam light source 1; a scanning/image resulting unit (see Figure 1); and a frame for supporting 108.

Mogi et al. fails to teach a multibeam light source comprising a laser diode; a driving circuit; a rotating member; and a fixing member. Mogi et al. further fails to teach the rotating member comprising a press fit hole into which the laser diode is placed and a rotating boss as a center of rotation. Mogi et al. still further fails to teach the fixing member comprising a first member accepting the rotating member, and a second member extending from the first member.

Regarding Claim 9: Makino teaches a multibeam light source within an image forming apparatus, the multibeam light source comprising a laser diode 30; a driving circuit, as a substrate 7 including a driving circuit for the semiconductor laser (Figure 2 and column 5, lines 9-15); a rotating member, as the combination of a rotating base 3 and a support body 2; and a fixing member, as the combination of a base 10 and an optical housing 12 (Figure 2). Examiner interprets the optical housing as an extension of the base continuing as a housing for the optical unit, and not as a frame for supporting the entirety of the scanning/image resulting unit. This interpretation based on the fact that Makino does not specifically disclose the optical housing as housing the entire scanning/image resulting unit but only being a 'optical' housing unit. The rotating

member is rotatable at an angle to align a plurality of beams emitted from the laser diode, and is also fixable to the fixing member. The order in which the parts of the apparatus are constructed is irrelevant in light of the fact that Claim 1 is claiming an apparatus not a method of construction. The order in which the parts of the apparatus are constructed is further irrelevant in light of the fact that the assembly order has no impact on the final structure of the apparatus.

Regarding Claim 12: Makino discloses a press fit hole (see center hole of support body 2 in Figure 2) into which the laser diode is fitted; and a rotating boss, as a sleeve shaft 3e, the rotating member being rotatable about the rotating boss. Makino further discloses the fixing member comprising a first member, as the base 10; and a second member, as the optical housing 12, extending vertically from the first member (see Figure 2).

Regarding Claim 13: Makino discloses a collimating lens 35 (Figure 3) located within a lens holder, disclosed by Makino as a mirror pipe 6 (Figure 2), the lens holder being placed within the second member of the fixing member (Figure 2).

Regarding Claims 9, 12 and 13: Various types of multibeam light sources being readily available, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mogi et al. in view of Makino such that the laser scanning apparatus of Mogi et al. uses the multibeam light source of Makino as an alternate multibeam light source.

Regarding Claim 11, Mogi et al. further teaches a polygon mirror 103; an image resulting lens 104; a cylindrical lens 102; and a synchronizing signal detection unit 107 (Figure 1).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mogi et al. (US 6,992,690) in view of Makino (US 6,320,647) and in further in view of Naoe et al. (US 5,758,950).

Mogi et al. in view of Makino teaches the laser scanning apparatus of claim 9 including a multibeam light source unit and a frame for supporting.

Mogi et al. in view of Makino fails to teach the light source unit fixed to the bottom of the supporting frame.

Naoe et al. teaches the mounting of a light source unit to the bottom of a supporting frame (Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mogi et al. in view of Makino such that the light source unit of Mogi et al. in view of Makino is mounted to the bottom of the frame as illustrated in Naoe et al. to allow for the separate construction of the light source unit and the frame.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mogi et al. (US 6,992,690) in view of Makino (US 6,320,647) as applied to claim 13 above and in further view of Makino (US 6,941,077) and in still further view of Watanabe (US 6,549,228).

Mogi et al. in view of Makino (US 6,320,647) teaches a laser scanning apparatus comprising a multibeam light source, the multibeam light source comprising a lens holder placed within a second member of a fixing member.

Mogi et al. in view of Makino (US 6,320,647) does not teach a multibeam light source comprising a semicircular groove for receiving the lens holder. Mogi et al. in view of Makino further does not teach the multibeam light source comprising a plurality of holes within the fixing member operable with fastening means to fasten the fixing member to an object.

Makino (US 6,941,077) teaches a multibeam light source comprising a fixing member, a plurality of holes (see the holes on bracket 49 of Figure 8A) within the fixing member operable with fastening means to fasten the fixing member to an object.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the bracket 49 and fastening holes of Makino (US 6,941,077) as the optical housing 12 of the multibeam light source of Mogi et al. in view of Makino (US 6,320,647) in order to fasten the optical housing to a printer casing or any other object where the multibeam light source might be used.

Watanabe teaches a U-shaped fixed supporting frame 27 firmly supporting a cylindrical member 26, the cylindrical member holding a collimating lens 3 (Figure 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mogi et al. in view of Makino (US 6,320,647) and in further view of Makino (US 6,941,077) to include the U-shaped, semicircular construction of the fixing

member of Watanabe in order to provide an alternate support structure for emitting laser beams in a predetermined direction as disclosed by Watanabe (column 6, lines 60-67).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kainoa BK Wright whose telephone number is (571) 272-5102. The examiner can normally be reached on M-F 8:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KAI

6/21/2006


HAI PHAM
PRIMARY EXAMINER